atomic hydrogen to reductive reaction in the downstream of those gases plasma is not clearly confirmed. Actually, U.S. Patent No. 5,403,436 introduced a surface cleaning by reduction effect of germanium ("GeH4") mixed into hydrogen molecule. In addition, ammonia ("NH3") itself is well known as a reductive gas.--

B2

On page 9, replace the third paragraph at line 14 with the following:

B3

--Above results indicate that hydrogen-halide and halogen, which generates hydrogen-halide by reaction with hydrogen in the plasma, has the effect of transporting atomic hydrogen to downstream. U.S. Patent No. 5,403,436 mentions a dry cleaning method that objective surface is treated in the downstream of a plasma with hydrogen mixture containing HCl, HBr, or HF, or directly exposed in the downstream of a hydrogen plasma to HCl, HBr, or HF, which independently was introduced into treatment chamber. In this document, recommended mixing amount of HCl, HBr or HF are, less than 50 SCCM for HCl or HBr into 12000 SCCM H2 and less than 10 SCCM for HF into 12,000 SCCM H2. Namely, mixing ratio of 0.42% to total gas flow is preferable for HCl and HBr and that of 0.083% is preferable for HF. From Fig. 3, however, small amount of HCl of about 0.42% scarcely has the effect of transporting atomic hydrogen. Fig. 5 shows the results of experiment used NF3 as an additive gas to hydrogen. They were not the results of HF mixing. However, almost of fluorine dissociated from NF3 probably makes HF by recombination with hydrogen during flowing from the plasma to the objective surface. Thus, HF of about 0.08% would be produced from NF3 of about 0.27% even if dissociation ratio of NF3 in the plasma was 10%. (This estimation is based on the assumption that three fluorine atoms dissociated from NF3 of 10 % makes three HF molecules.). The results obviously shows that such small amount of NF3 does not have enough level of atomic hydrogen transportation effect. Moreover, sapphire is recommended for the material of chamber wall more than quartz in U.S. Patent No. 5,403,436 to avoid degradation of the equipment. Its reason is not clarified, but phenomena is confirmed that atomic hydrogen can not be transported to the downstream even in the hydrogen-water vapor plasma when a sapphire reactor is used instead of a quartz reactor. Therefore, the recommended process in U.S. Patent No. 5,403,436 is out of range utilize atomic hydrogen and it is not possible to imagine this invention of halogen effect from U.S. Patent No. 5,403,436. Actually, purpose of HCl or HF described in U.S. Patent No. 5,403,436 is their direct operation to the surface reaction